DATA EVALUATION RECORD
§ 71-2 - UPLAND GAME BIRD DIETARY LC_{50} TEST

1. **CHEMICAL:** Pirimiphos-methyl **PC Code No.:** 108102

2. **TEST MATERIAL:** Pirimiphos-methyl technical **Purity:** 89.3%

3. **CITATION:**

Authors: B. Hakin, A. Johnson, A. Anderson, I.S. Dawe, J. Maxwell, and P. Limerick
Title: Pirimiphos-methyl: Dietary Toxicity (LD_{50}) to the Bobwhite Quail
Study Completion Date: May 1, 1990
Laboratory: Huntingdon Research Centre, Ltd., Huntingdon, Cambridgeshire, England
Laboratory Report ID: ISN 244/90755
Sponsor: ICI Americas Inc.
MRID No.: 420370-01
DP Barcode: D234797

4. **REVIEWED BY:** Mark A. Mossler, M.S., Toxicologist, KBN Engineering and Applied Sciences, Inc.

Signature: [signature] **Date:** 6/17/97

APPROVED BY: Pim Kosalwat, Ph.D., Senior Scientist, KBN Engineering and Applied Sciences, Inc.

Signature: P. Kosalwat **Date:** 6/14/97

5. **APPROVED BY:**

Signature: [signature] **Date:** 9/11/00

6. **STUDY PARAMETERS:**

Scientific Name of Test Organism: *Colinus virginianus*
Age of Test Organisms at Test Initiation: 11 days
Definitive Study Duration: 8 days

7. **CONCLUSIONS:** This study is scientifically sound and fulfills the guideline requirements for an acute dietary toxicity test using the bobwhite. Based on measured concentrations, the LC_{50} was 284 ppm, which classifies pirimiphos-methyl as highly toxic to the bobwhite quail.

Results Synopsis

LC_{50}: 284 ppm	95% C.I.: 164-643 ppm
NOEC: 164 ppm	Probit Slope: N/A

8. **ADEQUACY OF THE STUDY:**

A. Classification: Core

B. Rationale: N/A

C. Repairability: N/A

9. **GUIDELINE DEVIATIONS:**

1. The health of the birds at initiation was not reported.

2. The brooder temperature was not reported.

10. **SUBMISSION PURPOSE:**

11. **MATERIALS AND METHODS:**

A. Test Organisms

Guideline Criteria	Reported Information
Species: An upland game bird species, preferable the bobwhite (*Colinus virginianus*).	*Colinus virginianus*
Age at beginning of test: 10-14 days old.	11 days old
Supplier	D.R. and R.E. Wise, Monkfield, Bourn, Cambridgeshire
Chicks appeared healthy and did not have excessive mortality before the test?	Not reported
Acclimation period: As long as possible.	10 days

B. Test System

Guideline Criteria	Reported Information
Pen size: about 35 x 100 x 24 cm	83 x 52 x 51 cm

Guideline Criteria	Reported Information
Brooder temperature: about 35°C (95°F)	Not reported
Room temperature: 22-27°C (71-81°F)	Min. 25 ±2°C Max. 27 ±2°C
Relative humidity: 30-80%	41 ±5%
Adequate ventilation?	Yes
Photoperiod Minimum of 14 h of light.	Continuous
Diet: A commercial diet for game birds.	In-house chick diet

C. Test Design

Guideline Criteria	Reported Information
Range finding test?	No
Definitive Test **Nominal concentrations:** Four minimum, 5 or 6 strongly recommended, in a geometric scale, unless LC_{50} > 5000 ppm.	163, 325, 650, 1300, 2600, and 5200 ppm.
Controls: Control group tested with diet containing the maximum amount of vehicle used in treated diets?	3 control groups, no vehicle
Number of birds per group: 10 (strongly recommended)	10 birds per group
Vehicle: Distilled water, corn oil, propylene glycol, 1% carboxymethylcellulose, or gum arabic.	None
Vehicle amount (% of diet by weight): Not more than 2%	N/A

Guideline Criteria	Reported Information
Test durations: 5 days with treated feed and at least 3 days observation with "clean" feed.	Five day exposure period followed by a 3-day observation period
No mortality during last 72 hr of observations?	Yes

12. **REPORTED RESULTS:**

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Body weights measured at beginning and end of study?	Yes, group body weights measured at -3, 0, 5, and 8 days after test initiation
Estimated consumption per pen reported for pretreatment, treatment, and observation periods?	Yes
Control Mortality: Not more than 10%	No control mortality
Raw data included?	Yes
Signs of toxicity (if any) were described?	Yes

Mortality

Conc. (ppm)		No. of Birds	Cumulative Number of Dead							
			Day of Study							
Nominal	Measured		1	2	3	4	5	6	7	8
Control	<9	30	0	0	0	0	0	0	0	0
163	164	10	0	0	0	0	0	0	0	0
325	308	10	1	0	0	5	6	6	6	6
650	643	10	0	1	4	7	10	10	10	10
1300	1350	10	0	3	8	10	10	10	10	10
2600	2680	10	3	7	9	10	10	10	10	10
5200	5160	10	3	7	10	10	10	10	10	10

Other Significant Results: Signs of toxicity observed at the five highest-concentration treatment levels included subdued behavior, huddling together, unsteadiness of gait, drooping wings, and stumbling/lying on the pen floor. No signs of toxicity were observed in the control or 164 ppm treatment groups.

There appeared to be a reduction in body weight gain and feed consumption over the exposure period at the 308 ppm treatment level and a slight reduction in feed consumption at the 164 ppm treatment level when the treatment group values for each level were compared to the control group values.

Upon necropsy, one bird exposed at the 308 ppm level appeared to be thin. Necropsies of all other birds were unremarkable.

Statistical Results

Statistical Method: method of Thompson and Weil (based on nominal concentrations)

LC_{50}: 304 ppm 95% C.I.: 236 - 392 ppm
NOEC: Not reported Probit Slope: N/A

13. **VERIFICATION OF STATISTICAL RESULTS:**

Statistical Method: binomial test (based on measured concentrations)

LC_{50}: 284 ppm	95% C.I.: 164 - 643 ppm
NOEC: 164 ppm	Probit Slope: N/A

14. **REVIEWER'S COMMENTS:** The authors reported that feed consumption was reduced at all treatment levels during the exposure period. However, the reduction at the 164 ppm level for the entire exposure period (2.8 g/bird/day) is less than 25% in comparison to the lowest feed consuming control group (3.5 g/bird/day). Therefore, the reviewer believes that the NOEC for pirimiphos-methyl was 164 ppm.

This study is scientifically sound and fulfills the guideline requirements for an acute dietary toxicity test using the bobwhite. The LC_{50} was 284 ppm, which classifies pirimiphos-methyl as highly toxic to the bobwhite quail. The NOEC was 164 ppm. The study is classified as **Core**.

Mossler Pirimiphos-methyl Colinus virginianus 5-14-97

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
5160	10	10	100	9.765625E-02
2680	10	10	100	9.765625E-02
1350	10	10	100	9.765625E-02
643	10	10	100	9.765625E-02
308	10	6	60.00001	37.69531
164	10	0	0	9.765625E-02

THE BINOMIAL TEST SHOWS THAT 164 AND 643 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 284.3437

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

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